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Maine Agricultural Experiment Station

BULLETIN No. 140. MARCH, 1907.

FERTILIZER INSPECTION.

36

This bulletin contains the analyses of manufacturers' samples of brands of fertilizers licensed before February 10, 1907. Dealers are cautioned to consult with the Station before offering brands not given in this bulletin.

Requests for bulletins should be addressed to the
Agricultural Experiment Station,
Orono, Maine.

MAINE
AGRICULTURAL EXPERIMENT STATION
ORONO, MAINE.

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BULLETIN No. 140.

FERTILIZER INSPECTION.

CHAS. D. WOODS, Director.

J. M. BARTLETT, Chemist in Charge of Inspection Analyses.

The law regulating the sale of commercial fertilizers in this State calls for two bulletins each year. The first of these contains the analyses of the samples received from the manufacturer, guaranteed to represent, within reasonable limits, the goods to be placed upon the market later. The second bulletin contains the analyses of the samples collected in the open market by a representative of the Station.

In the tables which follow the discussion there are given the results of the analyses of the manufacturers' samples of licensed brands. The tables include all the brands which have been licensed to March 1, 1907. Dealers are cautioned against handling any brands not given in this list without first writing the Station.

The figures which are given as the percentages of valuable ingredients guaranteed by the manufacturers are the minimum percentages of the guarantee. If, for instance, the guarantee is 2 to 3 per cent of nitrogen, it is evident that the dealer cannot be held to have agreed to furnish more than 2 per cent, and so this percentage is taken as actual guarantee. The figures under the head of "found" are those showing the actual composition of the samples.

FERTILITY AND PLANT FOOD.

To produce profitable crops and at the same time to maintain and even to increase the productive capacity of the soil may rightly be termed "good farming." Many farmers are able to do this, and the knowledge of how to do it has been largely acquired through years of experience, during which the character of the soil, its adaptability for crops, and the methods of its management and manuring have been made the subjects of careful study, without, however, any definite and accurate knowledge concerning manures and their functions in relation to soils and crops. Those who desire to study these questions, are invited to write the Dean of the College of Agriculture, University of Maine, Orono, Maine, who will gladly send a list of suitable books and give full information relative to correspondence courses on this subject.

Soils vary greatly in their capabilities of supplying food to crops. Different ingredients are deficient in different soils. The way to learn what materials are proper in a given case is by observation and experiment. The rational method for determining what ingredients of plant-food a soil fails to furnish in abundance, and how these lacking materials can be most economically supplied, is to put the questions to the soil with different fertilizing materials and get the reply in the crops produced. How to make these experiments is explained in Circular No. 8 of the Office of Experiment Stations of the U. S. Department of Agriculture. A copy of this circular can be had by applying to the Secretary of Agriculture, Washington, D. C.

The chief use of fertilizers is to supply plant-food. It is good farming to make the most of the natural resources of the soil and of the manures produced on the farm, and to depend upon artificial fertilizers only to furnish what more is needed. It is not good economy to pay high prices for materials which the soil may itself yield, but it is good economy to supply the lacking ones in the cheapest way. The rule in the purchase of costly commercial fertilizers should be to select those that supply, in the best forms and at the lowest cost, the plant-food which the crop needs and the soil fails to furnish.

Plants differ widely with respect to their capacities for gathering their food from soil and air; hence the proper fertilizer in a given case depends upon the crop as well as upon the soil. The fertility of the soil would remain practically unchanged if all the ingredients removed in the various farm products were restored to the land. This may be accomplished by feeding the crops grown on the farm to animals, carefully saving the manure and returning it to the soil. If it is practicable to pursue a system of stock feeding in which those products of the farm which are comparatively poor in fertilizing constituents are exchanged in the market for feeding stuffs of high fertilizing value, the loss of soil fertility may be reduced to a minimum, or there may be an actual gain in fertility.

CONSTITUENTS OF FERTILIZERS.*

The only ingredients of plant-food which we ordinarily need to consider in fertilizers are potash, lime, phosphoric acid, and nitrogen. The available supply of lime is often insufficient; hence one reason for the good effect so often observed from the application of lime, and of plaster, which is a compound of lime and sulphuric acid. The remaining substances, nitrogen, phosphoric acid and potash, are the most important ingredients of our common commercial fertilizers, both because of their scarcity in the soil and their high cost. It is in supplying these that phosphates, bone manures, potash-salts, guano, nitrate of soda, and most other commercial fertilizers are chiefly useful.

The term "form" as applied to a fertilizing constituent has reference to its combination or association with other constituents which may be useful, though not necessarily so. The form of the constituent, too, has an important bearing upon its availability, and hence upon its usefulness as plant food. Many materials containing the essential elements are practically worthless as sources of plant-food because the form is not right; the plants are unable to extract them from their combinations; they are "unavailable." In many of these materials the forms may be changed by proper treatment, in which case they become valuable not because the element itself is changed, but because it then exists in such form as readily to feed the plant.

Nitrogen is the most expensive of the three essential fertilizing elements. It exists in three different forms, organic nitrogen, ammonia and nitrate.

Organic nitrogen exists in combination with other elements either as vegetable or animal matter. All materials containing organic nitrogen are valuable in proportion to their rapidity of decay, because change of form must take place before the nitrogen can serve as plant food. Organic nitrogen differs in availability not only according to the kind of material which supplies it, but according to the treatment it receives. The nitrogen in the tables of analyses marked "insoluble in water" is organic nitrogen.

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* Farmers Bulletin 44 of the U. S. Dept. of Agriculture, "Commercial Fertilizeres, Composition and Use," can be had free by applying to your Congressman. Bulletin 107, Home Mixed Fertilizers, of this Station will be sent on application.

Nitrogen as ammonia usually exists in commercial manures in the form of sulphate of ammonia and is more readily available than organic nitrogen. While nitrogen in the form of ammonia is extremely soluble in water, it is not readily removed from the soil by leaching, as it is held by the organic compounds of the soil.

Nitrogen as nitrate exists in commercial products chiefly as nitrate of soda. Nitrogen in this form is directly and immediately available, no further changes being necessary. It is completely soluble in water, and diffuses readily throughout the soil. It differs from the ammonia compounds in forming no insoluble compounds with soil constituents and may be lost by leaching. The "Nitrogen soluble in water" of the tables includes both the nitrogen as ammonia and as nitrate.

Phosphoric acid is derived from materials called phosphates, in which it may exist in combination with lime, iron, or alumina as phosphates of lime, iron or alumina. Phosphate of lime is the form most largely used as a source of phosphoric acid. Phosphoric acid occurs in fertilizers in three forms: That soluble in water and readily taken up by plants; that insoluble in water, but still readily used by plants, also known as "reverted;" and that soluble only in strong acids and consequently very slowly used by the plant. The "soluble" and "reverted" together constitute the "available" phosphoric acid. The phosphoric acid in natural or untreated phosphates is insoluble in water, and not readily available to plants. If it is combined with organic substance, as in animal bone, the rate of decay is more rapid than if with purely mineral substances. The insoluble phosphates may be converted into soluble forms by treatment with strong acids. Such products are known as acid phosphates or superphosphates. The "insoluble phosphoric acid" of a high cost commercial fertilizer has little or no value to the purchaser because at the usual rate of application the quantity is too small to make any perceptible effect upon the crop, and because its presence in the fertilizer excludes an equal amont of more needful and valuable constituents.

Potash in commercial fertilizers exists chiefly as muriates and sulphates. With potash the form does not exert so great an influence upon availability as is the case with nitrogen and phosphoric acid. All forms are freely soluble in water, and are believed to be nearly if not quite equally available as food. The form of the potash has an important influence upon the quality of certain crops. For example, the results of experiments seem to indicate that the quality of tobacco, and certain other crops is unfavorably influenced by the use of muriate of potash, while the same crops show a superior quality if materials free from chlorides have been used as the source of potash.

Valuation of Fertilizers.

The agricultural value of any fertilizing constituent is measured by the value of the increase of the crop produced by its use, and is, of course, a variable factor, depending upon the availability of the constituent, and the value of the crop produced. The form of the materials used must be carefully considered in the use of manures. Slow-acting materials cannot be expected to give profitable returns upon quick growing crops, nor expensive materials profitable returns when used for crops of relatively low value.

The agricultural value is distinct from what is termed "commercial value," or cost in market. This last is determined by market and trade conditions, as cost of production of the crude material, methods of manipulation required, etc. Since there is no strict relation between agricultural and commercial or market value, it may happen that an element in its most available form, and under ordinary conditions of high agricultural value, costs less in market than the same element in less available forms and of a lower agricultural value. The commercial value has reference to the material as an article of commerce, hence commercial ratings of various fertilizers have reference to their relative cost and are used largely as a means by which the different materials may be compared.

The commercial valuation of a fertilizer consists in calculating the retail trade-value or cash-cost at freight centers (in raw material of good quality) of an amount of nitrogen, phosphoric acid and potash equal to that contained in one ton of the fertilizer. Plaster, lime, stable manure and nearly all of the less expensive fertilizers have variable prices, which bear no close relation to their chemical composition, but guanos, superphosphates, and similar articles, for which $20 to $45 per ton are paid, depend for their trade value exclusively on the substances, nitrogen, phosphoric acid and potash, which are comparatively costly and steady in price. The trade-value per pound of these ingredients is reckoned from the current market prices of the standard articles which furnish them to commerce. The consumer, in estimating the reasonable price to pay for high-grade fertilizers, should add to the trade-value of the above-named ingredients a suitable margin for the expenses of manufacture, etc., and for the convenience or other advantage incidental to their use.

For many years this Station has not printed an estimate of the commercial value of the different brands licensed in the State. If anyone wishes to calculate the commercial value he can do so by using the trade values adopted for 1907 by the Experiment Stations of Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, Rhode Island and Vermont. These valuations represent the average retail prices at which these ingredients could be purchased during the three months preceding March 1, 1907, in ton lots at tide water in the states named. On account of the greater distance from the large markets the prices for Maine at tide water would probably be somewhat higher than those quoted.

TRADE VALUES OF FERTILIZING INGREDIENTS FOR 1907.

	Cents per pound.
Nitrogen in nitrates	18½
in ammonia salts	17½
Organic nitrogen in dry and fine ground fish, meat and blood, and in mixed fertilizers	20½
in fine bone and tankage	20½
in coarse bone and tankage	15
Phosphoric acid, water-soluble	5
cirate-soluble	4½
in fine ground bone and tankage	4
in coarse bone and tankage	3
in cotton seed meal, castor pomace and ashes	4
in mixed fertilizers, if insoluble in ammonium citrate	2

Potash as high grade sulphate and in forms free from muriate or chlorides	5
as muriate	4¼

The commercial valuation will be accurate enough as a means of comparison if the following rule is adopted:

RULE FOR CALCULATING VALUATION OF FERTILIZERS.

The commercial valuation will be accurate enough as a means of comparison if the following rule is adopted:

Multiply 4.1 by the percentage of nitrogen.

Multiply 0.9 by the percentage of available phosphoric acid.

Multiply 0.4 by the percentage of insoluble phosphoric acid.

Multiply 1.0 by the percentage of potash.

The sum of these 4 products will be the commercial valuation per ton on the basis taken.

Illustration. The table of analyses shows a certain fertilizer to have the following composition: Nitrogen 2.00 per cent; Available phosphoric acid 8.50 per cent; Insoluble phosphoric acid 3.50 per cent; Potash 3.25 per cent. The valuation in this case will be computed thus:

Nitrogen,	4.1×2.00,	$8 20
Available phosphoric acid,	0.9×8.50,	7 65
Insoluble phosphoric acid,	0.4×3.50,	1 40
Potash,	1.0×3.25,	3 25
		$20 50

Since this rule assumes all the nitrogen to be organic and all the potash to be in the form of the sulphate, it is evident that the valuations thus calculated must not be taken as the only guide in the choice of a fertilizer. In every case the farmer should consider the needs of his soil before he begins to consider the cost. In many instances a little careful experimenting will show him that materials containing either nitrogen, potash, or phosphoric acid alone will serve his purpose as fully as a "complete fertilizer," in which he must pay for all three constituents, whether needed or not.

Descriptive List of Manufacturers' Samples, 1907.

Station number.	Manufacturer, place of business and brand.
	AMERICAN AGRICULTURAL CHEMICAL CO., NEW YORK, N. Y.
1717	A. A. C. Co's Aroostook Complete Manure
1718	A. A. C. Co's Aroostook High Grade
1719	A. A. C. Co's Northern Maine Potato Special
1720	Bradley's Alkaline Bone with Potash
1721	Bradley's Complete Manure for Potatoes and Vegetables
1722	Bradley's Complete Manure with 10 per cent Potash
1723	Bradley's Corn Phosphate
1724	Bradley's Eureka Fertilizer
1725	Bradley's Niagara Phosphate
1726	Bradley's Potato Fertilizer
1727	Bradley's Potato Manure
1728	Bradley's X. L. Superphosphate of Lime
1729	Clark's Cove Bay State Fertilizer
1730	Clark's Cove Bay State Fertilizer G. G.
1731	Clark's Cove Bay State Fertilizer for Seeding Down
1732	Clark's Cove Defiance Complete Manure
1733	Clark's Cove Great Planet Manure AA
1734	Clark's Cove King Phillip Alkaline Guano
1735	Clark's Cove Potato Fertilizer
1736	Clark's Cove Potato Manure
1737	Cleveland Fertilizer for all Crops
1738	Cleveland High Grade Potato Manure
1739	Cleveland Potato Phosphate
1740	Cleveland Seeding Down Fertilizer
1741	Cleveland Superphosphate
1742	Complete Manure with 10 per cent Potash
1743	Crocker's Ammoniated Corn Phosphate
1744	Crocker's Aroostoook Potato Special
1745	Crocker's Grass & Oats Fertilizer
1746	Crocker's High Grade
1747	Crocker's New Rival Ammoniated Superphosphate
1748	Crocker's Potato, Hop and Tobacco
1925	Crocker's Special Potato Manure
1749	Cumberland Potato Fertilizer
1750	Cumberland Seeding Down Manure
1751	Cumberland Superphosphate
1752	Darling's Blood, Bone and Potash
1753	Fine Ground Bone
1754	Grass and Lawn Top Dressing
1755	Great Eastern General
1756	Great Eastern Grass and Oats Fertilizer
1757	Great Eastern High Grade Potato Manure
1758	Great Eastern Northern Corn Special
1759	Great Eastern Potato Manure
1760	Great Eastern Potato Special

Analysis of Manufacturers' Samples, 1907.

Station number.	Nitrogen.				Phosphoric Acid.							Potash.	
			Total.					Available.		Total.			
	Soluble in water.	Insoluble in water.	Found.	Guaranteed.	Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
1717	1.01	1.40	2.41	2.47	3.08	3.20	2.00	6.28	6.00	8.28	-----	10.04	10.00
1718	2.88	1.62	4.50	4.12	4.31	2.21	2.83	6.52	7.00	9.35	-----	7.60	7.00
1719	2.42	1.98	4.40	3.70	5.31	2.09	1.53	7.40	7.00	8.93	-----	9.85	10.00
1720	-----	-----	-----	-----	5.34	4.18	3.64	9.52	11.00	13.16	12.00	2.49	2.00
1721	2.57	1.37	3.94	3.30	5.49	2.08	2.72	7.57	8.00	10.29	9.00	6.52	7.00
1722	1.99	1.31	3.30	3.30	3.59	3.19	2.44	6.78	6.00	9.22	7.00	11.20	10.00
1723	0.66	1.42	2.08	2.06	7.05	2.55	2.56	9.60	8.00	11.16	10.00	2.01	1.50
1724	0.11	1.06	1.17	1.03	5.93	2.35	1.55	8.28	8.00	9.83	10.00	2.32	2.00
1725	0.40	0.64	1.04	.82	5.41	3.15	1.38	8.56	7.00	9.94	8.00	1.49	1.00
1726	1.64	0.62	2.26	2.06	5.85	1.89	2.67	7.74	8.00	10.41	10.00	3.13	3.00
1727	1.29	1.44	2.73	2.50	5.42	0.79	2.48	6.21	6.00	8.69	8.00	4.96	5.00
1728	1.45	1.13	2.58	2.50	6.62	2.54	3.25	9.16	9.00	12.41	11.00	2.34	2.00
1729	1.45	1.07	2.52	2.50	6.67	2.39	3.59	9.06	9.00	12.65	11.00	2.34	2.00
1730	1.58	0.74	2.32	2.06	5.42	2.39	3.32	7.81	8.00	11.13	10.00	1.85	1.50
1731	0.41	0.74	1.45	1.03	5.93	2.80	2.42	8.73	8.00	11.15	10.00	2.57	2.00
1732	0.40	0.68	1.08	.82	5.24	2.74	1.48	7.98	7.00	9.46	8.00	1.59	1.00
1733	1.88	1.52	3.40	3.30	5.20	3.01	1.96	8.21	8.00	10.17	9.00	7.43	7.00
1734	0.43	0.68	1.11	1.03	5.71	2.67	1.47	8.38	8.00	9.85	10.00	2.12	2.00
1735	1.76	0.56	2.32	2.06	5.92	1.98	2.74	7.90	8.00	10.64	10.00	3.30	3.00
1736	0.56	2.11	2.67	2.50	3.96	3.03	3.49	6.99	6.00	10.48	8.00	5.59	5.00
1737	0.34	0.72	1.06	1.03	5.50	2.87	2.60	8.37	8.00	10.97	10.00	2.30	2.00
1738	2.32	1.33	3.65	3.30	5.63	2.11	2.69	7.74	8.00	10.43	9.00	6.74	7.00
1739	1.63	0.56	2.19	2.06	6.06	1.74	2.73	7.80	8.00	10.53	10.00	3.17	3.00
1740	0.11	1.06	1.17	1.03	5.79	2.89	1.27	8.68	8.00	9.95	10.00	2.20	2.00
1741	0.66	1.40	2.06	2.06	7.17	2.35	2.62	9.52	8.00	12.14	10.00	2.03	1.50
1742	1.99	1.46	3.45	3.30	4.31	1.95	2.07	6.26	6.00	8.33	7.00	9.55	10.00
1743	0.26	2.06	2.32	2.06	4.52	3.65	3.87	8.17	8.00	12.04	-----	2.26	1.50
1744	0.81	1.29	2.10	2.06	5.17	3.33	2.03	8.50	8.00	10.53	-----	6.61	6.00
1745	-----	-----	-----	-----	7.54	4.28	1.79	11.82	11.00	13.61	-----	2.03	2.00
1746	1.79	1.52	3.31	3.29	5.87	2.41	2.50	8.28	8.00	10.78	-----	7.41	7.00
1747	0.23	1.14	1.37	1.03	4.82	3.70	2.47	8.52	8.00	10.99	-----	2.12	2.00
1748	1.10	1.10	2.20	2.06	5.98	2.07	2.68	8.05	8.00	10.73	-----	3.34	3.00
1925	2.01	1.30	3.31	3.29	3.84	3.29	2.34	7.13	6.00	9.47	-----	10.80	10.00
1749	0.72	1.34	2.06	2.06	6.13	4.17	2.33	10.30	8.00	12.63	10.00	3.38	3.00
1750	0.44	0.72	1.16	1.03	5.42	2.98	2.53	8.40	8.00	10.93	10.00	2.53	2.00
1751	1.64	0.74	2.38	2.08	5.30	2.56	3.18	7.86	8.00	11.04	10.00	1.89	1.50
1752	2.76	1.40	4.16	4.10	4.98	1.90	2.48	6.88	7.00	9.36	8.00	7.16	7.00
1753	-----	-----	2.50	2.47	--	-----	-----	-----	-----	25.31	22.80	-----	-----
1754	4.44	0.08	4.52	3.91	1.03	5.16	0.97	7.69	5.00	8.66	6.00	3.56	2.00
1755	0.52	0.96	1.48	0.82	5.17	2.42	3.05	7.59	8.00	10.64	-----	4.73	4.00
1756	-----	-----	-----	-----	4.11	6.88	4.08	10.99	11.00	15.07	-----	2.15	2.00
1757	2.38	1.00	3.38	3.29	4.87	3.25	1.86	8.12	6.00	9.98	-----	10.64	10.00
1758	0.42	1.84	2.26	2.06	5.02	4.60	2.35	9.62	8.00	11.98	-----	2.26	1.50
1759	0.85	1.23	2.08	2.06	5.92	2.31	2.76	8.23	8.00	10.99	-----	3.37	3.00
1760	1.68	1.62	3.30	3.29	5.87	2.27	2.56	8.14	8.00	10.70	-----	7.57	7.00

Descriptive List of Manufacturers' Samples, 1907.

Station number.	Manufacturer, place of business and brand.
1761	High Grade Fertilizer with 10 per cent Potash
1762	High Grade Sulphate of Potash
1763	Lazaretto Aroostook Potato Guano
1764	Lazaretto Corn Guano
1765	Lazaretto High Grade Potato Guano
1766	Lazaretto Propellor Potato Guano
1767	Lazaretto Special Potato Guano
1768	Muriate of Potash
1769	Nitrate of Soda
1770	Otis' Potato Fertilizer
1771	Otis' Superphosphate
1772	Pacific Dissolved Bone and Potash
1773	Pacific Grass and Grain
1774	Pacific High Grade General Fertilizer
1775	Pacific Nobsque Guano
1776	Pacific Potato Special
1777	Packer's Union Animal Corn Fertilizer
1778	Packer's Union Economical Vegetable Guano
1779	Packer's Union Gardener's Complete Manure
1780	Packer's Union High Grade
1781	Packer's Union Potato Manure
1782	Packer's Union Universal Fertilizer
1783	Packer's Union Wheat, Oats and Clover Fertilizer
1784	Plain Superphosphate
1785	Quinnipiac Climax Phosphate for all Crops
1786	Quinnipiac Corn Manure
1787	Quinnipiac Market Garden Manure
1788	Quinnipiac Mohawk Fertilizer
1789	Quinnipiac Potato Manure
1790	Quinnipiac Potato Phosphate
1791	Read's Farmers' Friend
1792	Read's High Grade Farmers' Friend
1793	Read's Potato Manure
1794	Read's Practical Potato Special
1795	Read's Standard Superphosphate
1796	Read's Sure Catch Fertilizer
1797	Read's Vegetable and Vine Fertilizer
1798	Soluble Pacific Guano
1799	Standard A Brand
1800	Standard Bone and Potash
1801	Standard Complete Manure
1802	Standard Fertilizer
1803	Standard Guano for all Crops
1804	Standard Special for Potatoes
1805	William's & Clark Americus Ammoniated Bone Superphosphate
1806	William's & Clark Americus Corn Phosphate
1807	William's & Clark Americus High Grade Special
1808	William's & Clark Americus Potato Manure

Analysis of Manufacturers' Samples, 1907.

Station number.	Nitrogen.				Phosphoric Acid.							Potash.	
	Soluble in water.	Insoluble in water.	Total.		Soluble.	Reverted.	Insoluble.	Available.		Total.		Found.	Guaranteed.
			Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
1761	1.50	1.03	2.53	2.40	5.82	1.76	2.63	7.58	6.00	10.21	7.00	10.44	10.00
1762	......	......	......	......	......	......	......	......	......	......	......	49.80	48.00
1763	0.19	0.78	0.97	.8235	5.69	3.36	2.11	9.05	8 00	11.16	......	4.57	4.00
1764	0.95	1.02	1.97	1.64	4.47	3.20	2.74	7.67	8.00	10.41	......	2.53	2.00
1765	1.21	1.82	3.03	3.29	4.00	1.90	2.27	5.90	6.00	8.17	......	10.60	10.00
1766	0.70	1.30	2.00	2.06	5.69	2.56	2.88	8.25	8.00	11.13	......	6.52	6.00
1767	1.69	1.56	3.25	3.29	5.85	2.27	2.55	8.12	8.00	10.67	......	7.70	7.00
1768	......	......	......	......	......	......	......	......	......	......	......	49 63	50.00
1769	15.12	......	15.12	15.00	......	......	......	......	......	......	......	......	......
1770	1.74	0.58	2.32	2.06	5.74	2.28	2.46	8.02	8.00	10 48	10.00	3.05	3.00
1771	0.68	1.38	2.06	2.06	6.94	2.92	2.43	9.86	8.00	12.29	10.00	2.16	1.50
1772	......	......	......	......	5.98	4.81	1.91	10.70	10.00	12.70	11.00	2.43	2.00
1773	0.42	0.64	1.06	.82	5.46	3.01	1.43	8.47	7.00	9.90	8.00	2.99	1.00
1774	2.13	1.41	3.54	3.30	5.15	2.92	2.14	8 07	8.00	10.21	9.00	7.18	7.00
1775	0.45	0.80	1.25	1.03	5.53	2.31	2.73	7 84	8.00	10.57	10.00	2.14	2.00
1776	0.76	1.34	2.10	2.06	5.69	4.27	2.70	9.96	8.00	12.66	10.00	3.15	3.00
1777	0.31	2.10	2.41	2.47	5.64	3.22	3.46	8.86	9.00	12.32	......	1.91	2.00
1778	0.26	1.42	1.68	1.25	4.65	2.55	2.15	7.20	6.00	9.35	......	3.59	3.00
1779	1.38	1.16	2.54	2.47	5.58	0.47	2.06	6.05	6.00	8.11	......	10.99	10.00
1780	1.75	1.56	3.31	3.29	5.85	2.41	2.55	8.26	8.00	10.81	......	7 53	7.00
1781	0.96	1.10	2.06	2.06	4.85	3.16	1.85	8.01	8.00	9.86	.....	6.54	6.00
1782	0.25	0.96	1.21	0.82	6.05	3.22	1.46	9.27	8.00	10.73	......	5.04	4.00
1783	......	......	......	......	......	......	1.20	10.92	11.00	12.12	......	2.39	2.00
1784	......	......	......	......	10.21	3.91	1.30	14.12	14.00	15.42	15.00	......	......
1785	0.39	1.06	1.45	1.03	5.10	3.54	1.63	8.64	8 00	10.27	10.00	2.91	2.00
1786	0.67	1.38	2.05	2.06	6.69	2.63	2.41	9.32	8.00	11.73	10.00	1.95	1.50
1787	2.19	1.08	3 58	3.30	4.23	4.67	1.47	8.90	8.00	10.37	9.00	7.57	7.00
1788	0.03	0.83	0.86	.82	2.60	4.87	3.86	7.47	7.00	11 33	8.00	1.58	1.00
1789	1.03	1.50	2 53	2.50	2.55	4.03	3.06	6.58	6.00	9.64	8.00	5.15	5.00
1790	0.74	1.30	2.04	2.06	5.61	4.71	2.36	10.32	8.00	12.68	10.00	3.34	3.00
1791	1.57	0.62	2.19	2.06	5.84	2.08	2.59	7.92	8.00	10.51	10.00	3.11	3.00
1792	2.23	1.48	3.71	3.30	3.96	2.13	2.08	6.09	6.00	8.17	7.00	9.59	10.00
1793	0.42	2.28	2.70	2.40	4.59	1.89	1.25	6.48	6.00	7.73	7.00	10.94	10.00
1794	0.42	0.74	1.16	.82	1.64	2.56	1.99	4.20	4.00	6.19	5.00	8.03	8.00
1795	0.10	0.94	1.04	.82	5.87	2.89	2 23	8.76	8.00	10.99	10.00	4.81	4.00
1796	......	......	......	......	5.42	3.90	3.09	9.32	10.00	12.41	11.00	2.59	2.00
1797	0.32	1.80	2.12	2.06	5.94	2.25	1.38	8.29	8.00	9.67	10.00	6.35	6.00
1798	1.58	0.80	2.38	2.06	5.18	2.81	3.01	8.09	8.00	11.10	10.00	1.89	1.50
1799	0.31	0.90	1.21	.82	3.64	4.10	2.08	7.74	7.00	9.82	8.00	1.56	1.00
1800	......	......	......	......	7.66	2.60	1.96	10.26	10.00	12.22	11.00	2.08	2.00
1801	2.40	0.90	3.30	3.30	7.02	1.99	1.04	8.81	8.00	9.85	9.00	7.56	7.00
1802	1.60	0.78	2.38	2.06	5.14	2.41	3.36	7.55	8.00	10.91	10.00	1.70	1.50
1803	0.37	0.70	1.07	1.03	5.31	3.03	1.44	8.34	8.00	9.74	10.00	2.10	2.00
1804	1.68	0.62	2.30	2.06	5.82	2.22	2.45	8.04	8.00	10.49	10.00	3.17	3.00
1805	1.40	1.35	2.75	2.50	5.52	2.65	3.44	8.17	9.00	11.61	11.00	2.78	2.00
1806	1.35	0.76	2.11	2.06	5.58	2.78	3.04	8.36	8.00	11.40	10.00	1.99	1.50
1807	2.36	1.33	3.69	3.30	5.57	2.56	2.48	8.13	8.00	10.61	9.00	6.54	7.00
1808	1.68	0.60	2.28	2.06	6.17	2.02	2.48	8.19	8.00	10.67	10.00	3.28	3.00

Descriptive List of Manufacturers' Samples, 1907.

Station number.	Manufacturer, place of business and brand.
1809	William's & Clark Royal Bone Phosphate for all Crops
	ARMOUR FERTILIZER WORKS, BALTIMORE, MD.
1810	All Soluble
1811	Armour's Complete Potato
1812	Bone, Blood & Potash
1813	Fruit and Root Crop Special
1814	Grain Grower
1815	High Grade Potato
1816	Wheat Corn and Oats Special
	BOWKER FERTILIZER CO., BOSTON, MASS.
1817	Bowker's Bone and Potash Square Brand
1818	Bowker's Bone, Blood and Potash
1819	Bowker's Complete Manure for Potatoes and Vegetables
1820	Bowker's Corn Phosphate
1821	Bowker's Early Potato Manure
1822	Bowker's Farm and Garden Phosphate
1823	Bowker's Fresh Ground Bone
1824	Bowker's Hill and Drill Phosphate
1825	Bowker's Market Garden Phosphate
1826	Bowker's Potash Bone
1827	Bowker's Potash or Staple Phosphate
1828	Bowker's Potato and Vegetable Fertilizer
1829	Bowker's Potato and Vegetable Phosphate
1830	Bowker's 6 per cent Potato Fertilizer
1831	Bowker's Superphosphate with Potash for Grass & Grain
1832	Bowker's Sure Crop Phosphate
1833	Bowker's Ten Per Cent Manure
1834	Monticello Grange Chemical
1835	Special Potato Manure for the Grange
1836	Stockbridge's Manure "A" for Potatoes, etc
1837	Stockbridge's Special Complete Manure for Corn and all Grain Crops
1838	Stockbridge's Special Complete Manure for Grass and Top Dressing, etc.
1839	Stockbridge's Special Complete Manure for Permanent Dressing, Seeding Down, etc
1840	Stockbridge's Special Complete Manure for Potatoes and Vegetables
	COE-MORTIMER CO., NEW YORK, N. Y.
1841	E. Frank Coe's Celebrated Special Potato Fertilizer
1842	E. Frank Coe's Columbian Corn Fertilizer
1843	E. Frank Coe's Columbian Potato Fertilizer
1844	E. Frank Coe's Double Strength Potato Manure
1845	E. Frank Coe's Excelsior Potato Fertilizer
1846	E. Frank Coe's Famous Prize Brand Grain and Grass Fertilizer
1847	E. Frank Coe's High Grade Ammoniated Bone Superphosphate
1848	E. Frank Coe's High Grade Potato Fertilizer
1849	E. Frank Coe's New Englander Corn and Potato Fertilizer
1850	E. Frank Coe's Red Brand Excelsior Guano
1851	E. Frank Coe's Special Grass and Grain Fertilizer
	HUBBARD FERTILIZER CO., BALTIMORE, MD.
1856	Hubbard's Bone, Blood and Potash
1857	Hubbard's Farmer's I. X. L. Superphosphate
1858	Hubbard's Royal Ensign

Descriptive List of Manufacturers' Samples, 1907.

Station number.	Nitrogen.				Phosphoric Acid.							Potash.	
			Total.					Available		Total.			
	Soluble in water.	Insoluble in water.	Found.	Guaranteed.	Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
1809	0.29	0.82	1.11	1.03	5.47	3.14	2.55	8.61	8.00	11.16	10.00	2.59	2.00
1810	1.93	1.64	3.57	2.88	7.70	1.19	0.54	8.89	8.00	9.43	10.00	4.40	4.00
1811	1.56	2.06	3.62	3.28	5.85	1.67	0.57	7.52	6.00	8.09	8.00	10.94	10.00
1812	2.34	2.21	4.55	4.11	6.67	1.47	1.01	8.24	8.00	9.25	10.00	8.40	7.00
1813	.75	1.06	1.81	1.65	7.78	0.35	0.47	8.13	8.00	9.60	10.00	5.93	5.00
1814	0.94	0.72	1.60	1.65	5.61	2.35	1.26	7.96	8.00	9.22	10.00	2.51	2.00
1815	.94	.96	1.90	1.65	8.05	1.08	0.50	9.13	8.00	9.63	10.00	10.70	10.00
1816	0.22	0.60	0.82	.82	5.04	2.24	2.02	7.28	7.00	9.30	9.00	1.24	1.00
1817	1.03	0.81	1.84	1.65	1.04	3.68	7.10	4.72	6.00	11.82	7.00	2.34	2.00
1818	2.59	2.02	4.61	4.10	6.28	1.47	1.37	7.75	7.00	9.12	9.00	6.67	7.00
1819	1.59	1.64	3.23	3.29	4.66	1.58	2.58	6.24	6.00	8.82	7.00	10.51	10.00
1820	0.40	1.14	1.54	1.65	2.27	5.90	2.19	8.17	8.00	10.36	9.00	2.52	2.00
1821	2.32	.94	3.26	3.29	6.78	1.40	1.02	8.18	8.00	9.20	9.00	7.60	7.00
1822	0.52	1.16	1.68	1.65	2.20	6.62	2.50	8.92	8.00	11.42	9.00	2.80	2.00
1823	-----	-----	2.53	2.47	-----	-----	-----	-----	-----	21.42	22.80	-----	-----
1824	0.71	1.73	2.44	2.47	3.27	5.48	2.76	8.75	9.00	11.51	10.00	2.16	2.00
1825	1.59	0.79	2.38	2.47	5.55	2.12	1.34	7.67	6.00	9.01	7.00	9.85	10.00
1826	0.90	-----	0.90	.82	3.05	1.93	3.03	4.98	6.00	8.01	8.00	2.10	2.00
1827	0.18	0.74	0.92	.82	1.69	6.43	2.15	8.12	8.00	10.27	9.00	3.37	3.00
1828	0.61	1.73	2.34	2.47	7.26	2.32	0.83	9.58	8.00	10.41	10.00	4.30	4.00
1829	0.30	1.18	1.48	1.65	2.28	6.79	2.31	9.07	8.00	11.38	9.00	2.32	2.00
1830	0.35	0.65	1.00	.82	1.39	4.82	3.05	6.21	6.00	9.26	7.00	6.48	6.00
1831	-----	-----	-----	-----	4.39	5.30	1.71	9.69	10.00	11.40	11.00	2.84	2.00
1832	0.35	0.72	1.07	.82	4.93	3.50	2.42	8.43	8.00	10.88	9.00	2.37	2.00
1833	0.17	0.69	0.86	.82	1.29	3.92	1.99	5.21	5.00	7.20	6.00	10.34	10.00
1834	1.15	1.09	2.24	2.50	5.34	2.80	1.67	8.14	8.00	9.81	12.00	4.17	4.00
1835	1.21	.90	2.11	1.65	5.76	6.30	2.74	12.06	9.00	14.80	12.00	9.75	12.00
1836	1.60	2.64	4.24	4.11	4.31	2.77	1.93	7.08	7.00	9.01	8.00	11.11	10.00
1837	1.93	1.40	3.30	3.29	7.89	2.30	0.91	10.19	10.00	11.10	11.00	7.39	7.00
1838	3.18	1.88	5.06	4.93	3.01	2.69	2.26	5.70	4.00	7.96	6.00	6.11	6.00
1839	0.79	1.59	2.38	2.47	2.97	2.88	4.24	5.85	6.00	10.00	9.00	10.04	10.00
1840	1.32	1.88	3.20	3.29	2.57	3.54	2.27	6.11	6.00	8.38	7.00	10.34	10.00
1841	1.26	0.62	1.88	1.65	7.34	1.19	2.71	8.53	8.00	11.24	10.00	4.73	4.00
1842	0.60	0.74	1.34	1.23	7.29	2.77	2.53	9.46	8.50	12.01	10.50	2.98	2.50
1843	0.54	0.80	1.34	1.23	6.30	2.16	2.49	9.46	8.50	11.95	10.50	3.08	2.50
1844	2.62	1.14	3.76	3.70	4.88	2.37	2.40	7.25	7.00	9.65	8.50	11.75	10.00
1845	1.46	0.96	2.41	2.47	6.03	1.97	2.22	8.00	7.00	10.22	9.00	9.35	8.00
1846	-----	-----	-----	-----	6.64	3.96	3.06	10.55	10.50	13.61	12.00	2.59	2.00
1847	1.02	1.06	2.08	1.85	6.76	2.26	2.30	9.02	9.00	11.32	11.00	3.09	2.25
1848	1.68	0.92	2.60	2.40	7.15	1.53	2.76	8.68	8.00	11.44	10.00	6.48	6.00
1849	0.63	0.70	1.33	0.80	7.15	2.42	2.60	9.57	7.50	12.17	9.00	3.11	3.00
1850	2.30	1.07	3.37	3.30	7.59	2.14	1.77	9.73	9.00	11.50	10.00	6.74	6.00
1851	0.07	0.73	0.80	0.80	6.73	2.57	2.81	9.30	8.50	12.11	10.00	2.28	1.50
1856	1.60	2.12	3.72	3.29	9.14	0.48	0.76	9.62	8.00	10.38	9.00	9.09	7.00
1857	1.06	0.90	1.96	1.65	7.35	1.43	0.96	8.78	8.00	9.74	9.00	2.53	2.00
1858	1.58	1.36	2.94	2.47	8.80	1.08	0.55	9.88	8.00	10.43	9.00	4.55	4.00

Descriptive List of Manufacturers' Samples, 1907.

Station number.	Manufacturer, place of business and brand.
	JOHN WATSON CO., HOULTON, ME.
1859	Watson's Improved High Grade Manure
	LISTER'S AGRICULTURAL CHEMICAL WORKS, NEWARK, N. J.
1860	Lister's Bone and Potash
1861	Lister's Bone Meal
1862	Lister's High Grade Special for Spring Crops
1863	Lister's Oneida Special
1864	Lister's Potato Manure
1865	Lister's Special Corn
1866	Lister's Special Potato
1867	Lister's Success
1868	Lister's 10 per cent Potato Grower
	NATIONAL FERTILIZER CO., BRIDGEPORT, CONN.
1869	Chittenden's Complete Root Fertilizer
1870	Chittenden's Excelsior Potato Fertilizer
1871	Chittenden's Eureka Potato Fertilizer
1872	Chittenden's Market Garden Fertilizer
	NEW ENGLAND FERTILIZER CO. BOSTON, MASS.
1881	New England Complete Manure
1873	New England Corn & Grain Fertilizer
1874	New England Corn Phosphate
1875	New England High Grade Potato Fertilizer
1876	New England High Grade Special
1877	New England Market Garden Manure
1879	New England Potato Fertilizer
1878	New England Potato Grower
1880	New England Superphosphate
	PARMENTER & POLSEY FERTILIZER CO., PEABODY, MASS.
1882	A. A. Brand
1883	Aroostook Special
1884	Maine Potato Fertilizer
1885	Plymouth Rock
1886	Special Potato Fertilizer
	PORTLAND RENDERING CO. PORTLAND ME.
1889	Bone Dust Tankage
	R. T. PRENTISS CO., PRESQUE ISLE, ME.
1890	Prentiss' Aroostook Complete
1891	Prentiss' Aroostook Standard
	PROVINCIAL CHEMICAL CO., ST. JOHN, N. B.
1892	Special Potato Phosphate
1893	10 per cent Complete "Aroostook" Potato
	P. H. REED, FT. FAIRFIELD, ME.
1894	Reed's Potato Grower
	TUSCARORA FERTILIZER CO., BALTIMORE, MD.
1895	Tuscarora Aroostook Special
1896	Tuscarora Complete Potato
1897	Tuscarora Fruit and Potato
1898	Tuscarora Trucker
	RUSSIA CEMENT CO., GLOUCESTER, MASS.
1899	Essex A1 Superphosphate
1900	Essex Aroostook County Special Potato Manure
1901	Essex Complete Manure for Aroostook County Crops
1902	Essex Complete Manure for Corn, Grain and Grass
1903	Essex Complete Manure for Potatoes, Roots and Vegetables
1904	Essex Market Garden and Potato Manure
1905	Essex XXX Fish and Potash

Analysis of Manufacturers' Samples, 1907.

Station number.	Nitrogen.				Phosphoric Acid.							Potash.	
	Soluble in water.	Insoluble in water.	Total.		Soluble.	Reverted.	Insoluble.	Available.		Total.		Found.	Guaranteed.
			Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
1859	2.30	1.30	3.60	3.00	4.69	1.37	1.63	6.06	6.00	7.69	7.00	5.25	5.00
1860	......	......	......	......	6.44	3 84	2.19	10.28	11.00	12.47	13.00	2.26	2.00
1861	......	......	3.70	2.68	......	......	......	......	.....	25.33	23.00	......	......
1862	0.45	1.50	1.95	1.65	3.75	4.34	3.07	8.09	8.00	11.16	10.00	11.16	10.00
1863	0.34	0.83	1.17	.83	4.42	3.71	2.48	8.13	7.00	10.61	8.00	1.16	1.00
1864	1.92	1.25	3.17	3.30	5.50	2.46	3.09	7.96	8.00	11.05	9.00	7.22	7.00
1865	0.70	1.12	1.82	1.65	5.63	3.72	2.39	9.35	8.00	11.74	9.00	3.66	3.00
1866	0.64	1.22	1.86	1.65	5.66	3.94	2.19	9.60	8.00	11.79	9.00	3.52	3.00
1867	0.31	0 99	1.30	1.24	6.16	3.02	2.58	9.18	9 00	11.76	11.00	2.37	2.00
1868	1.36	1.64	3.00	3.29	4.39	2.17	2.58	6.56	6.00	9.14	7.00	9.57	10.00
1869	1.71	1.73	3.44	3.30	6.51	1.49	1.78	8.00	8.00	9.78	10.00	6.01	6.00
1870	1.80	1.76	3.56	3.30	4.08	1.88	1.85	5 96	6.00	7.81	8.00	10.56	10.00
1871	0.85	1.78	2.63	2.40	4.19	1.46	1.75	5.65	6.00	7.40	8.00	10.48	10.09
1872	1.16	1.26	2.42	2.40	3.70	2.49	2.17	6.19	6.00	8.36	8.00	5.63	5.00
1881	1.91	1.48	3.39	3.28	3.45	3.14	3.57	6.59	6.00	10.16	7.00	10.04	10.00
1873	0.44	0.76	1.20	1.23	5.66	1.40	0.55	7.06	7.00	7.61	8.00	2.05	2.00
1874	0.76	1.02	1.78	1.64	3.85	4.93	1.33	8.78	8.00	10.11	9.00	3.23	3.00
1875	1.28	1.20	2.48	2.46	5.65	2.38	2.16	8.03	8.00	10.19	9.00	6.18	6.00
1876	2.32	1.40	3.72	3.69	5.38	3.53	1.17	8.91	7.00	9.08	8.00	10.54	10.00
1877	2.07	2.22	4.29	4.10	5.95	1.16	1.91	7.11	7.00	9.02	8.00	7.91	7.00
1879	0.88	0.88	1.76	1.64	3.46	4.89	0.98	8.35	7.00	9.33	8.00	4.28	4.00
1878	1.38	1.16	2.54	2.46	3.45	2.59	2.40	6.04	6.00	8.44	7.00	10.33	10.00
1880	.88	1.60	2.48	2.46	5.66	1.93	3.77	7.59	8.00	11.36	10.00	4.34	4.00
1882	2.11	2.44	4.55	4.10	5.93	1.86	1.67	7.79	7.00	9.46	8.00	7.64	8.00
1883	2.70	1.26	3.96	3.69	5.33	1.95	2.64	7.28	7.00	9.92	8 00	10.18	10.00
1884	2.38	1.26	3.64	3.29	5.10	0.99	1.85	6.09	6.00	7.94	7.00	10.90	10.00
1885	.96	1.62	2.58	2.47	4.86	2.75	3.67	7.61	8.00	11.28	9.00	4.11	4.00
1886	2.00	1.36	3.36	3.29	6.09	1.04	1.53	7.13	8.00	8.66	9.00	7.06	7.00
1889	1.00	3.74	4.74	5.00	......	......	......	......	......	17.86	16.00	......	......
1890	3.07	.46	3.53	3.29	3.35	2.99	0.84	6.34	6.00	7.18	8.00	12.89	10.00
1891	.92	.70	1.62	1.62	5.02	1.55	2.07	6.57	8.00	8.64	10.00	10.61	10.00
1892	1.06	1.08	2.14	2.08	7.73	1.13	4.30	8.86	8.00	13.16	12.00	6.15	6.00
1893	3.39	0.76	4.15	3.29	6.83	1.11	0.87	8.00	8.00	8.87	8.87	11.15	10.00
1894	2.02	1.88	3.90	3.29	7.15	0.83	1.03	7.98	7.00	9.01	8.00	9.07	8.00
1895	1.45	1.16	2.61	2.47	6.94	1.18	0.89	8.12	7.00	9.01	8.00	9.23	8.00
1896	1.66	1.96	3.62	3.29	5.73	1.04	1.06	6.77	6.00	7.83	7.00	10.78	10.00
1897	.74	1.02	1.76	1.65	7.89	0.98	1.08	8.87	8.00	9.95	9.00	11.40	10.00
1898	2.64	2.12	4.76	4.12	7.93	0.93	0.63	8.86	8.00	9.49	9.00	7.35	7.00
1899	0.18	1.34	1.52	1.00	1.96	5.32	4.93	7.20	7.00	12.22	9.00	2.11	2.00
1900	1.03	1.64	2.67	2.40	1.71	4.14	4.48	5.85	7.00	10.33	8.00	4.65	5.00
1901	.99	2.30	3.29	3.30	5.26	1.81	5.29	7.07	7.00	12.36	9.50	8.82	9.50
1902	0.97	2.91	3.88	3.30	5.90	3.75	1.50	9.65	7.00	11.15	9.50	9.36	9.50
1903	0.96	3.22	4.18	3.70	6.33	2.62	3.14	8.95	7.00	12.09	9.00	8.39	8.50
1904	0.79	1.55	2.34	2.00	5.25	5.17	2.65	10.42	8.00	13.07	10.00	5.06	5.00
1905	0.56	1.82	2.38	2.10	6.14	2.70	3.28	8.84	9.00	12.12	12.00	4.11	2.25

Descriptive List of Manufacturers' Samples, 1907.

	SAGADAHOC FERTILIZER CO., BOWDOINHAM, ME.
1906	Acid Phosphate
1907	Aroostook Potato Manure
1908	Dirigo Fertilizer
1909	Muriate of Potash
1910	Nitrate of Soda
1911	Sagadahoc High Grade Superphosphate
1912	Sagadahoc Special Potato Fertilizer
1913	XX Chemical Fertilizer
1914	Yankee Fertilizer
	SWIFT'S LOWELL FERTILIZER CO., BOSTON, MASS.
1926	3-6-And 10 Fertilizer
1927	4-6-And 10 Fertilizer
1915	Swift's Lowell Animal Brand
1916	Swift's Lowell Bone Fertilizer
1917	Swift's Lowell Cereal Fertilizer
1918	Swift's Lowell Dissolved Bone and Potash
1919	Swift's Lowell Empress Brand
1920	Swift's Lowell Potato Manure
1921	Swift's Lowell Potato Phosphate
1922	Swift's Potato Grower
1923	Swift's Special Vegetable Manure
1924	Swift's Superior Fertilizer

ERROR. Nos. 1926 and 1927 are
Sagadahoc Fertilizer Co.'s goods

Analysis of Manufacturers' Samples, 1907.

Station number.	Nitrogen.				Phosphoric Acid.							Potash.	
			Total					Available.		Total.			
	Soluble in water.	Insoluble in water.	Found.	Guaranteed.	Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
1906	......	......	......	......	16.86	0.95	0.80	17.81	16.00	18.61	17.00	......	......
1907	0.92	0.08	1.00	1.05	7.11	1.44	0.45	8.55	6.00	9.00	7.00	4.97	4.00
1908	0.13	0.44	0.57	.85	6.62	0.89	5.46	7.51	6.00	12.97	9.00	3.32	3.00
1909	......	......	......	......	......	......	......	......	......	......	......	53.20	50.00
1910	15.58	......	15.58	15.00	......	......	......	......	......	......	......	......	......
1911	1.54	0.38	1.92	1.85	6.86	1.14	3.50	8.00	7.00	11.50	8.00	4.37	3.00
1912	1.33	0.58	1.91	2.00	4.63	1.66	4.54	6.29	7.00	10.83	8.00	9.83	8.00
1913	7.03	1.07	8.10	7.00	......	......	3.76	4.29	3.00	8.05	7.00	10.05	8.00
1914	0.35	0.41	0.76	0.40	7.30	2.73	1.04	10.03	7.00	11.07	8.00	3.05	2.00
1926	1.73	.80	2.53	3.25	3.11	1.56	1.98	4.67	5.00	6.65	7.00	10.18	10.00
1927	2.65	.80	3.45	2.35	3.19	3.75	1.70	6.94	5.00	8.64	7.00	10.57	10.00
1915	1.04	1.54	2.58	2.46	4.66	4.69	3.97	9.35	8.00	13.32	10.00	4.19	4.00
1916	0.73	0.94	1.67	1.64	5.26	2.76	1.79	8.02	8.00	9.81	9.00	3.20	3.00
1917	0.34	0.50	0.84	.82	5.22	1.76	1.32	6.98	7.00	8.30	8.00	1.18	1.00
1918	.72	1.04	1.76	1.64	8.21	1.80	1.15	10.01	9.00	11.16	10.00	2.35	2.00
1919	.87	.54	1.41	1.23	4.85	2.50	2.32	7.35	7.00	9.67	8.00	2.15	2.00
1920	.69	.94	1.63	1.64	4.55	2.10	2.17	6.65	7.00	8.82	8.00	4.07	4.00
1921	1.31	1.16	2.47	2.42	5.66	2.49	1.71	8.15	8.00	9.86	9.00	6.35	6.00
1922	2.14	1.42	3.56	3.28	4.99	1.51	1.35	6.50	6.00	7.85	7.00	10.53	10.00
1923	1.88	1.48	3.36	3.28	5.95	1.38	1.68	7.33	8.00	9.01	9.00	7.10	7.00
1924	2.52	1.28	3.80	3.69	5.60	1.98	1.30	7.58	7.00	8.88	8.00	10.23	10.00

FREE ANALYSIS OF FEEDS, FOODS, FERTILIZERS, AND SEEDS.

The Station takes pains to obtain for analysis samples of all brands of fertilizers and feeding stuffs coming under the law. It also draws samples of agricultural seeds and foods in the hands of dealers. The co-operation of dealers and consumers is, however, essential for the full and timely protection of their interests.

Foods. Dealers and consumers are invited to send by prepaid express original and unbroken packages of food materials on sale in Maine of whose purity they are for any reasons suspicious. As prompt free analysis will be made of such samples as circumstances will allow.

Feeding Stuffs. The Station will promptly analyze samples of feeding stuffs sold in Maine taken in accordance with directions which will be furnished on application. The results will be reported without charge to interested parties. This applies to dealers and consumers alike.

Commercial Fertilizers. It is difficult to draw accurate samples of commercial fertilizers. On this account it is only in rare instanes that the Station undertakes analyses of fertilizers other than the samples collected by its representatives. In case there is special reason for an examination, the Station invites correspondence on the subject.

Agricultural Seeds. Samples of agricultural seeds on sale in Maine, taken in accordance with directions which can be obtained on application to the Station, will be examined as promptly as possible and the results reported free of charge.

In all cases samples should be accompanied by a full description of the goods, including the name and address of the dealer and the sender. Small samples other than liquids can be forwarded by mail. Others should be forwarded by express, charges prepaid. Both mail and express matter should be addressed to the

Agricultural Experiment Station,
Orono, Maine.